



**California Energy Commission**  
**2013 Building Energy Efficiency Standards**  
**Minimum Water Heater Energy Factor**  
**Reference Guide**

**Gas-fired**

Volume	Federal Minimum Energy Factor
30	0.63
35	0.62
40	0.62
45	0.61
50	0.60
55	0.59
60	0.75

**Instantaneous Gas-fired**

Volume	Federal Minimum Energy Factor
< 2 gallons	0.82

**Electric**

Volume	Federal Minimum Energy Factor
30	0.95
35	0.95
40	0.95
45	0.95
50	0.95
55	0.94
60	1.99

**Instantaneous Electric**

Volume	Federal Minimum Energy Factor
< 2 gallons	0.93

**Tabletop**

Volume	Federal Minimum Energy Factor
30	0.89
35	0.88
40	0.88
45	0.87
50	0.86
55	0.86
60	0.85

**Oil-fired**

Volume	Federal Minimum Energy Factor
30	0.62
35	0.61
40	0.60
45	0.59
50	0.59
55	0.58
60	0.57

Energy factors were determined using the equations in 10 CFR 430.31(d) (<http://www.gpo.gov/fdsys/pkg/CFR-2012-title10-vol3/pdf/CFR-2012-title10-vol3-sec430-32.pdf>).

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To be used for prescriptive alterations only. The energy factor is climate zone dependent.

**Heat Pump**

Climate Zone	Minimum Required Energy Factor
1	2.75
2	2.75
3	2.75
4	2.80
5	2.75
6	2.33
7	2.50
8	2.33
9	2.33
10	2.33
11	2.50
12	2.80
13	2.50
14	2.50
15	2.33
16	3.00 plus a solar water heating system with solar savings fraction $\geq 0.4$

Per Section 150.2(b)1Giv of the Energy Standards, the California Energy Commission used the performance compliance approach to determine the minimum energy factor (EF) needed to be able to prescriptively replace an existing water heater with a heat pump water heating system. A heat pump water heating system, meeting these minimum EFs, can replace an existing water heater regardless of original fuel type (natural gas, LPG, or electric).

The EFs listed for heat pump water heating systems can only be used for residential single dwelling unit alterations.